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BOTANY.—*New species of plants from Salvador.*[1] PAUL C. STANDLEY, U. S. National Museum.

The present paper consists of descriptions of new species of plants of various families, collected in the Republic of El Salvador by Dr. Salvador Calderón, and by the writer in the course of his visit to the country during the winter of 1921–22. The description of a new species of grass has been contributed by Mrs. Agnes Chase, and those of several new Piperaceae and an *Agave* by Dr. William Trelease.

Pennisetum vulcanicum Chase, sp. nov.

Base not seen, plant presumably perennial, probably about 1 meter tall; culms erect or ascending, terete and scabrous below the panicle, otherwise compressed and glabrous, bearing leafy branches from the lower nodes; nodes glabrous; leaves numerous, the sheaths much overlapping, keeled, villous along the margin and on the sides of the collar, otherwise glabrous or very sparsely pilose; ligule a dense ring of hairs about 1 mm. long; blades rather firm, ascending, flat or drying folded, 20 to 45 cm. long, 5 to 8 mm. wide, slightly narrower at base than the summit of the sheath, tapering into an elongate setaceous scabrous tip, scabrous and papillose-pubescent or papillose only on the upper surface, glabrous beneath, the midnerve prominent beneath; panicle slightly flexuous, 10 to 17 cm. long, 18 to 20 mm. wide excluding the longest bristles, tawny or obscurely purple-tinged, rather dense except at the base, the axis strongly angled, pilose on the angles; fascicles on hairy peduncles 1 to 1.5 mm. long, finally spreading or reflexed; bristles numerous, scabrous, united at the very base, very unequal, the outermost short, slender, scabrous only, the inner 1 to 1.5 cm. long, flattened, flexuous, plumose about half their length, the innermost one stouter, 2 to 5 cm. long, plumose at base, unequal in fascicles of the same panicle, the longer in the middle fascicles; spikelets 3 to 5 in each fascicle (only 1 or 2 well developed), sessile, 6 to 9 mm. long, about 1.4 mm. wide, attenuate, scaberulous; glumes attenuate, 3 to 5-nerved, the first $\frac{1}{4}$ to $\frac{1}{3}$, the second $\frac{2}{3}$ to $\frac{3}{4}$, as long as the spikelet; sterile lemma nearly as long as the fertile, finely many-nerved, inclosing a palea of nearly

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equal length and a staminate flower; fertile lemma subindurate, 5-nerved, the apex attenuate and spreading.

Type in the U. S. National Herbarium, no. 1,152,018, collected in the crater of the volcano Cerro de la Olla near Chalchuapa, Salvador, in 1922, by Dr. Salvador Calderón (no. 1049).

This species is related to *Pennisetum karwinskyi* Schrad., from the highlands of Mexico, from which it differs chiefly in its larger panicles, in its more numerous bristles, the inner plumose, and in the much longer innermost bristles. A second collection of this species, *Jiménez* 522, from Nuestro Amo, on the Pacific slope of Costa Rica, was referred to *P. karwinskyi* as an exceptional specimen, in a recent revision of the genus.[2] In this specimen the innermost bristles are as much as 5 cm. long, but the inner bristles are much less plumose than in the Salvador specimen. Like that, the plant is without the base.

Lindmania flaccida Standl., sp. nov.

Plants terrestrial; leaves basal, few, very thin and soft, 25–30 cm. long or larger, 3.5–4.5 cm. wide, entire, slightly narrowed near the base, rather abruptly narrowed to a short subulate tip, glabrous above and slightly brown-spotted, beneath very sparsely stellate-lepidote; inflorescence about 50 cm. high, once-branched, the branches long and slender, about 10 cm. long, solitary or fasciculate, sparsely arachnoid-villous or glabrate, the bracts of the scape entire, thin, about equaling the nodes; flowers scarcely secund, nodding, the pedicels slender, about 3 mm. long, glabrous, the bractlets lance-ovate, scarious, much exceeding the pedicels and often equaling the sepals; sepals ovate, acute, about 3 mm. long, scarious, persistent; petals linear-lanceolate, eligulate, 7–8 mm. long, green, acute, conspicuously nerved; stamens shorter than the petals, the anthers linear-oblong, yellow, undulate, not contorted; ovary almost wholly superior, glabrous, the style long and slender, equaling or surpassing the stamens, the branches slender-clavate; seeds numerous, minute, dark brown, with a pale appendage at each end.

Type in the U. S. National Herbarium, no. 1,135,666, collected on a moist shaded bank along a stream in the mountains near Ahuachapán, Salvador, January, 1922, by Paul C. Standley (no. 19786).

The genus *Lindmania* has not been reported previously from Central America, the known species being natives of South America. The present plant may perhaps represent an undescribed genus, but it seems to agree moderately well in most of its characters with the plants heretofore referred to *Lindmania*.

Tillandsia vicentina Standl., sp. nov.

Plants solitary, epiphytic; leaves numerous, about 25–30 cm. long, equaling the inflorescence, thin, 3–5 mm. wide at the middle, the bases 1.5–2 cm. wide, brownish, the blades green on the upper surface and covered with closely appressed scales, beneath silvery, covered with coarse loose whitish scales; scapes 15–25 cm. high, stout, covered with numerous overlapping bracts, these coarsely lepidote, their tips filiform-attenuate, their bases slightly inflated; spikes 5–11, simple, digitate or shortly pinnate, sessile, 4–7 cm. long,

[2] Chase, Contr. U. S. Nat. Herb. 22: 220. 1921.

their bracts compressed, 2–2.5 cm. long, pink, thin, loosely appressed and overlapping for half their length, coarsely and loosely lepidote; sepals distinct, 2 cm. long, glabrous; corolla violet, exceeding the bracts 2–2.5 cm.; stamens conspicuously exceeding the corolla, the style long-exserted.

Type in the U. S. National Herbarium, no. 1,137,360, collected on the Volcán de San Vicente, Salvador, altitude about 1500 meters, March 8, 1922, by Paul C. Standley (no. 21588). *Standley* 21588 from the same locality represents the same species.

Related to *T. digitata* Mez and *T. flabellata* Baker, but readily distinguished by the coarse, loose pubescence of the leaves and bracts. The pubescence is similar to that of *T. streptophylla* Scheidw., but less coarse, and the leaves are not dilated at the base as in that species.

Dioscorea salvadorensis Standl., sp. nov.

Stems scandent, slender, very minutely and sparsely hirtellous or glabrate, with elongate internodes; petioles mostly 2.5–3.5 cm. long, pubescent like the stems; leaf blades about 9 cm. wide and 7–9 cm. long, cordate at base, with a broad rounded sinus, 3-lobed to the middle or nearly to the base, the lateral lobes somewhat falcate, obtuse to acuminate, the terminal lobe obtuse to acuminate and cuspidate-mucronate, glabrous on the upper surface, beneath minutely muricate-hirtellous along the nerves; staminate spikes solitary, long-pedunculate, simple, 15–22 cm. long or longer, the rachis glabrous, slender, the flowers sessile; bractlets lance-attenuate, shorter than the flowers; perianth segments narrowly oblong, obtuse, 2 mm. long, glabrous; stamens 3, two-thirds as long as the perianth segments, the anthers oblong, the filaments broad, slightly dilated toward the base, nearly equaling the anthers.

Type in the U. S. National Herbarium, no. 1,151,507, collected on the Cerro de la Olla, on the Guatemalan frontier, near Chalchuapa, Salvador, in 1922, by Dr. Salvador Calderón (no. 1020). Also collected at La Cebadilla, Departamento de San Salvador in 1922, *Calderón* 1238.

Among the Central American species of *Dioscorea* this is easily recognized by its trilobate leaves.

Agave calderoni Trelease, sp. nov.

Of the group *Guatemalenses*. Acaulescent, not cespitose (?). Leaves green or very lightly and evanescently glaucescent, oblanceolate-oblong, acute, smooth, about 15 cm. wide and 80 cm. long; spine brown or somewhat tinged with purple at base, slightly glossy, elongate-conical or subacicular, straight, slightly flattened above and involutely grooved with acute edges below the middle, narrowly decurrent for about twice its own length, intruded into the green tissue dorsally, about 40 mm. long and 5 mm. thick; teeth chestnut-colored, 5–10 mm. apart, firm, but small (scarcely 1 mm. long), triangular, lenticularly widened into the nearly straight margin. Inflorescence paniculate, apparently with rather short branches and closely bunched flowers, the rather thick and short (5 mm.) pedicels densely invested by short broad papery bracts. Flowers bright orange, about 40 mm. long; ovary 15–20 mm. long, about equaling the perianth, oblong; tube broadly conical, scarcely 5 mm. deep; segments 10–15 mm. long, shorter than the ovary; filaments inserted nearly in the throat, about 40 mm. long. Capsules unknown; not known to be bulbiferous.

Type in the U. S. National Herbarium, no. 1,152,451, taken from a plant cultivated in San Salvador, Salvador, January, 1923, by Dr. Salvador Calderón (no. 1463).

The vernacular name is *magueyón*.

Peperomia izalcoana Trelease, sp. nov.

A glabrous subrhizomatous herb; stem slender (2 mm.), scarcely 30 cm. high; leaves alternate, round- or subdeltoid-ovate, blunt or subacute, round-based, moderate or rather small (2–4.5 cm. long), 5 or 7-nerved; petiole rather short (scarcely 3 cm.); spikes terminal and opposite the leaves, 40–100 mm. long, loosely flowered; peduncle, depending on the spike length, 1–3 cm. long; bracts round-peltate; berries ellipsoid, essentially sessile; style short but evident; stigma apical.

Type in the herbarium of the University of Illinois, collected at Izalco, Salvador, on wet bank, March 19, 1922, by Paul C. Standley (no. 21874).

Peperomia matapalo Trelease, sp. nov.

A villous assurgent herb; leaves alternate or the uppermost congested into a whorl of 2 or 3, elliptic-oblanceolate or the lower reduced and obovate, rather small (1.5–2 cm. wide, 3–4.5 cm. long), obtuse or bluntly acuminate, cuneate, 5-nerved, appressed-villous on both faces; petiole short (5 mm.); spikes terminal, 2 mm. thick, 50–70 mm. long, rather closely flowered; peduncle 10–15 mm. long; bracts round-peltate; ovary subglobose; stigma obliquely anterior.

Type in the herbarium of the University of Illinois, collected at San Salvador, Salvador by Dr. Salvador Calderón (no. 1121).

The common name is *matapalo*.

Peperomia standleyi Trelease, sp. nov.

A delicate fleshy glabrous herb, creeping over tree branches; stem filiform; leaves commonly 4–6 at a node, elliptic-obovate, acute-based, minute (5–7 mm. wide, 8–10 mm. long), 1 or obscurely 3-nerved, impressed-punctulate; petiole 2–3 mm. long; spikes terminal, scarcely 2 mm. thick and 15 mm. long, rather loosely flowered; peduncle about 10 mm. long; bracts round-peltate; ovary ovoid, submucronulate; stigma apical.

Type in the herbarium of the University of Illinois, collected at Tonacatepeque, Departamento de San Salvador, Salvador, December 30, 1921 by Paul C. Standley (no. 19426).

Piper patulum cordifolium Trelease, var. nov.

A shrub 2–3 m. tall, glabrous except that the leaves are more or less puberulent on the nerves beneath; leaves broadly ovate, acuminate, deeply cordate with rather narrow sinus, moderately large (10–16 cm. wide, 15–23 cm. long); spikes in fruit 4 mm. thick and 130 mm. long; berries oblong-truncate, glabrous.

Type in the herbarium of the University of Illinois, collected at Nahulingo, Departamento de Sonsonate, Salvador, March 21, 1922, by Paul C. Standley (no. 22046).

Piper standleyi Trelease, sp. nov.

A shrub 1–1.5 m. tall; twigs slender, for a time conspicuously subhirsute; leaves membranous, lance-oblong, long-acuminate, inequilaterally cordulate, rather small (1.5–2.5 cm. wide, 5–9 cm. long), subpalmately 5-nerved, hirsute

beneath on the nerves; petioles short (2–4 mm.), not winged, hirsute; inflorescence unknown.

Type in the herbarium of the University of Illinois, collected on the Volcán de San Salvador, Salvador, in moist forest, altitude about 1800 meters, April 7, 1922, by Paul C. Standley (no. 22894).

Piper uncatum Trelease, sp. nov.

A practically glabrous shrub with the general characters of *P. marginatum* but the subciliate leaves concavely truncate at base and with the margins subconfluent across the petiole, and with rather slender spikes 2–3 mm. thick and 150 mm. long, abruptly hooked below the middle.

Type in the herbarium of the University of Illinois, collected at Tonacatepeque, Departamento de San Salvador, Salvador, December 30, 1921, by Paul C. Standley (no. 19435).

Piper uncatum levyanum Trelease, var. nov.

Differing from the type in having the upper surface of the leaves and the veins beneath more or less persistently hairy.

Type in the Copenhagen Herbarium, collected at Granadá, Nicaragua by Lévy (no. 1294). *Baker* 850 from the same locality also represents the same variety.

Ficus rensoniana Calderón & Standl., sp. nov.

Young branchlets brownish, densely fulvous-pilose; stipules ovate-oblong, 1.5–2 cm. long, acute or acuminate, rather tardily deciduous, thin, brown, densely pilose outside below the middle; petioles stout, 1–2.5 cm. long, densely pilose; leaf blades oval or oblong-oval, broadest at or near the middle, 7–10.5 cm. long, 4–6 cm. wide, cordate at base, rounded or very obtuse at apex, coriaceous, short-pilose above, especially along the nerves, copiously short-pilose beneath with white hairs, the lateral nerves prominent, 6 or 7 pairs, arcuate-ascending, distant, anastomosing near the margin; peduncles geminate, stout, 4–6 mm. long; involucre bilobate, 10–12 mm. long, the lobes rounded, thin, brown, strigose near the base, glabrous within; receptacles globose, 8–11 mm. in diameter, glabrous, the ostiole prominent, closed by 3 rounded scales.

Type in the U. S. National Herbarium, no. 1,152,090, collected at San Salvador, Salvador, August, 1920, by Dr. Salvador Calderón (no. 1120).

Most closely related, apparently, to *F. pringlei* S. Wats., which is distinguished from the Salvadorean tree by its dense pubescence, larger receptacles, and sericeous involucres.

Aristolochia salvadorensis Standl., sp. nov.

A large woody vine, the branches densely brownish-puberulent, with very short internodes; petioles stout, densely puberulent, 5–7 mm. long; leaf blades oblong, often slightly wider above the middle, 11–20 cm. long, 4–9 cm. wide, acute or abruptly short-acuminate, rounded at base, thick, glabrous above, with prominulous venation, beneath lustrous, puberulent along the nerves, 5-nerved from the base and with several pairs of lateral nerves, the veins very prominent and reticulate; racemes large, branched, borne at the base of the stem, the rachis densely brown-pilose with short hairs, often geniculate, the bracts ovate or lanceolate, 12 mm. long or less, sometimes green and foliaceous, the pedicels mostly 5–7 cm. long, slender; bractlets none

at base of calyx; ovary about 1.5 cm. long, abruptly curved near the base, 6-costate, densely brown-pilose; calyx dark brown-purple, about 4.5 cm. long, sparsely puberulent outside, the tube very short and inflated, the pouch inflated, rounded, produced within the limb into a large blunt recurved beak, the limb shallowly 3-lobed, the 2 lateral lobes broad, acute, the central lobe much smaller and narrower, acute or short-acuminate; style short, the stigma obscurely lobate; capsule oblong, about 7 cm. long and 2–2.5 cm. in diameter, sharply 6-angulate, brown-tomentulose.

Type in the U. S. National Herbarium, no. 1,111,203, collected at San Salvador, February 9, 1923, by Dr. Salvador Calderón (no. 1484). The following additional specimens have been examined:

SALVADOR: San Salvador, November, 1921, *Calderón* 287. Santa Tecla, August, 1922, *Calderón* 1096. Sierra de Apaneca, region of the Finca Colima, Departamento de Ahuachapán, January, 1922, *Standley* 20036.

The vernacular names are *guaco, guaquito,* and *guaquito de la tierra.* Like other species of the genus, it is employed locally as a remedy for snake bites.

Aristolochia salvadorensis is related to *A. arborea* Linden, but has very different flowers and much smaller, reticulately veined leaves. The leaves somewhat resemble those of *A. maxima* L., which also is abundant in Salvador, but the flowers of the two species are quite dissimilar, and even sterile specimens of the two are easily distinguishable.

Coccoloba montana Standl., sp. nov.

Young branchlets terete, pale, glabrous; ocreae brown, glabrous, 6–7 mm. long; petioles stout, glabrous, 12–20 mm. long; leaf blades ovate or oblong-ovate, 10–20 cm. long, 5.5–10 cm. wide, acuminate or long-acuminate, unequal at base, rounded on one side, on the other semicordate, glabrous above, glabrous beneath except along the costa, there brownish-tomentose, especially in the axils of the lateral nerves, papyraceous, the costa salient on both surfaces, the venation conspicuous above and beneath and closely reticulate.

Type in the U.S. National Herbarium, no. 1,135,924, collected in the Sierra de Apaneca, region of the Finca Colima, Departamento de Ahuachapán, Salvador, January, 1922, by Paul C. Standley (no. 20061).

The vernacular name is *papaturro.* Although known only from sterile specimens, the leaves of this *Coccoloba* are so distinct from those of the other Central American species that it seems desirable to give it a name for purposes of reference.

Pleuropetalum calospermum Standl., sp. nov.

Slender shrub, 1–2 m. high, the young branches granular-papillose; petioles slender, 1–3 cm. long; leaf blades oblong-ovate to lance-oblong, 9–13 cm. long, 3–5 cm. wide, long-acuminate, rounded or obtuse at base and abruptly decurrent upon the petiole, thin, bright green above, paler beneath, when young obscurely puberulent but quickly glabrate; inflorescences terminal and in the upper axils, cymose-paniculate, few-flowered, long-pedunculate, shorter than the leaves; pedicels very stout, sometimes 7 mm. long but usually much shorter; bractlets rounded-ovate, 1 mm. long; sepals rounded-oval, 3–3.5 mm. long, rounded at apex, sharply ribbed, glabrous; fruit baccate, black, 6–7 mm. broad, globose, glabrous; seeds numerous, on thickened

funicles, nearly 2 mm. in diameter, black, lustrous, with a metallic and iridescent sheen.

Type in the U. S. National Herbarium, no. 1,135,662, collected in a moist wooded ravine in the mountains near Ahuachapán, Salvador, altitude about 1000 meters, January, 1922, by Paul C. Standley (no. 19782). Also collected in the region of Finca Colima, Sierra de Apaneca, Departamento de Ahuachapán, *Standley* 20074.

Two other species of *Pleuropetalum* are known from Central America, *P. sprucei* (Hook. f.) Standl., which ranges from Veracruz to Ecuador, and **P. pleiogynum** (Kuntze) Standl. (*Celosia pleiogyna* Kuntze, Rev. Gen. Pl. 541. 1891). In the North American Flora[3] the latter was referred to the genus *Celosia*, but further study of the material indicates that it is really a species of *Pleuropetalum*.

Pleuropetalum calospermum has sepals of about the same size as those of *P. pleiogynum*, but in the latter the seeds are half as large, much more numerous, and on slender funicles. From *P. sprucei* the Salvadorean plant is distinguished by its much larger sepals and capsules.

ENTOMOLOGY.—*Three new Pemphredonine wasps (Hymenoptera).* S. A. ROHWER, Bureau of Entomology.

Two of the species described below have been recently received from correspondents who are anxious to use the specific name in connection with some observations on habits of the species.

Microstigmus guianensis, new species.

This species seems to be very close to *M. theridii* Ducke, which has been recorded from French Guiana by Buysson,[1] but it does not agree with the description in all ways, especially in the sculpture of the mesoscutum.

Female.—Length 2.5 mm. Clypeus gently convex, the anterior margin broadly and gradually rounded; interocular quadrangle somewhat higher than broad; head shining, polished; the ocelli in an acute triangle; flagellum slightly thickening apically, the first joint distinctly longer than the second, which is slightly longer than the third; dorsal surface of the pronotum polished, the anterior margin with a sharp carina; mesoscutum coarsely reticulate, the posterior margin with a transverse carina; the scutellum with four strong carinae which meet medianly and form a transverse pyramid, the posterior face of which has a triangular shaped area bounded by striae; posterior margin of the scutellum with a strong, high carina; dorsal area of the propodeum irregularly reticulate on a granular surface, the margin bounded by a U-shaped carina; mesepisternum granular and with a few irregular raised lines; sides of the propodeum with a few oblique striae; posterior face of the propodeum with coarse reticulations; petiole short, carinate laterally; abdomen polished; stigma oval, its greatest width slightly longer than the first abscissa of the radius. Head rufo-ferrugineous; clypeus, mandibles and lower part of face stramineous; thorax, legs and petiole stramineous; the top of the scutellar

[3] 21:98. 1917.

[1] Ann. Soc. Ent. France, 76:29. 1907.

tubercle and the posterior scutellar ridge piceous; (the scutum has two oval brownish spots, but inasmuch as these are asymmetrical it is probable that they are due to discoloration); apical part of the abomen ferrugineous; wings hyaline, iridescent, with a slight yellowish tinge; venation fulvous, except black stigma.

Type-locality—Kartabo, Bartica District, British Columbia.

Described from a single female collected by P. G. Howes, 1922, and given his number 16622. This specimen is collected with its nest. The nest in general outline agrees very well with Ducke's figure of the nest of *M. theridii*.[3]

Type.—Cat No. 26480 U.S.N.M.

Microstigmus brunniventris, new species.

The dark abdomen readily distinguishes this species from the other known forms.

Female.—Length 2.25 mm. Clypeus convex, the anterior margin with a broad, gentle emargination; interocular quadrangle broader than high; the lower part of frons finely granular, the rest of the head polished; flagellum only slightly thickening apically, short, first joint slightly shorter than the second; ocelli in an equilateral triangle; dorsal surface of pronotum polished, the anterior margin with a sharp carina; scutum rather coarsely granular and in some lights with a tendency to become feebly rugose; scutellum pyramidal but, when seen from the top, with lozenge-shaped area; posterior margin with a low ridge; dorsal surface of the propodeum U-shaped with two median longitudinal ridges on a feebly reticulate surface; posterior face of the propodeum coarsely reticulate, the reticulations in three series so that at some angles there appear to be three transverse ridges; mesepisternum reticulate; sides of the propodeum granular and with large, poorly defined reticulations; petiole longer than the hind coxa, with two carinae which become approximate medianly; abdomen highly polished; stigma triangular, its greatest width distinctly greater than the first abscissa of the radius. Ferrugineous; apices of the antennae, dorsal aspect of the propodeum piceous: abdomen, including petiole, very dark brown; legs testaceous; wings hyaline, iridescent; venation testaceous, except a dark brown stigma.

Type-locality.—San Bernardino, Paraguay.

Described from a single female collected May 19th by K. Fiebrig.

Type.—Cat No. 26481 U. S. N. M.

Stigmus fulvicornis, new species.

This species seems to be closest to *S. conestogorum* Rohwer, but it is smaller, the intermediate legs are pale, and the sides of the pronotum are without a dentation.

Female.—Length 3 mm. Head, when seen from above, subquadrate, though slightly narrowing posteriorly; anterior margin of the clypeus bilobed; front very finely granular, rest of the head smooth and polished; antenna simple, the third joint subequal with the fourth; dorsal surface of the pronotum rather coarsely rugoso-granular, the transverse carina rather feeble and subdentate laterally; sides of the pronotum not dentate; mesoscutum polished, under high magnification feebly reticulate anteriorly and with the usual impressed

[3] Ann. Soc. Ent. France, 76: 29. 1907.

longitudinal lines, under high magnification the posterior portion is lineolate; suture between the scutum and the scutellum foveolate; scutellum flat, the surface finely reticulato-granular; the metanotum sculptured like the scutellum; dorsal aspect of the propodeum with a median longitudinal ridge and with three U-shaped ridges, the surface between these with large irregular reticulations; mesepisternum granular above, shining below; sides of the propodeum obliquely striate with a tendency to become reticulate dorsally; petiole with two longitudinal carinae which approximate each other posteriorly; the area between the carinae anteriorly with transverse rugae; the area laterad of the carinae with oblique ridges; abdomen highly polished; pygidium sharply defined, two times as long as the basal width; second and third abscissae of the cubitus subequal. Black; antennae, four anterior legs, posterior trochanters, bases of the posterior tibiae and the posterior tarsi ferrugineous; tubercles white; tegulae testaceous; wings hyaline, iridescent; venation, including the stigma, pale brown.

Type-locality.—Starkville, Mississippi.

Described from four females (one type) received from M. R. Smith, who states that the species was nesting in holes in a floor of a piazza, and that the nests were provisioned with aphids.

Type and *paratype.*—Cat No. 26479, U. S. N. M. Paratypes returned to the collection of the Agricultural College of Mississippi.

PROCEEDINGS OF THE ACADEMY AND AFFILIATED SOCIETIES

BIOLOGICAL SOCIETY

652D MEETING

The 652d meeting of the Biological Society was held in the lecture room of the Cosmos Club March 31, 1923, at 8.05 p.m., with President HITCHCOCK in the chair and 112 persons present. HOMER C. SKEELS was elected to membership.

Under *Short Notes*, Dr. R. W. SHUFELDT exhibited a large bullfrog captured in Alexandria a few days before, which when properly excited, squalled very much like a toy balloon or a cat in distress.

Miss P. L. BOONE reported a newly discovered fossil deposit near Weems, Virginia, containing isopods and a skeleton which may be that of a crocodile.

S. F. BLAKE reported the observation of a belled turkey buzzard in Washington in October 1922. Similar cases were mentioned by P. BARTSCH and F. A. MCCLURE.

The regular program was as follows: C. A. REED: *Biological observations in China* (lantern). The speaker described his itinerary on a recent trip in China, and gave an account of the methods of agriculture of the Chinese, illustrating his talk with numerous lantern slides. The paper was discussed by Messrs. MCCLURE, HOWARD, STILES, SHUFELDT, HITCHCOCK, and PIPER. (No abstract received.)

C. W. STILES: *Brother Bryan's revolution against evolution.* According to Mr. Bryan's premises, all germs which cause disease must have been created in the beginning as they exist today. If it is to be conceded that these germs were originally created in some form other than as disease germs, the theory of evolution stands admitted. Obviously, since Adam was the last animal created and since the animals were not created until after the plants, it is unthinkable that any of the numerous germs which cause disease were created after Adam. Since disease germs are dependent for their existence upon animals and plants in which they cause disease, it is clear that these germs could not have been created or have existed prior to the creation of their victims. A challenge of this deduction would be an admission that the germs were not created as they are to-day, but that they later evolved into disease germs; but this would be an admission of evolution. Therefore, if Mr. Bryan's challenge is to be accepted, we must conclude that Adam harbored every germ disease which is characteristic of man or dependent on man for its life cycle, and that, further, the Garden of Eden may have been in China, because that is the only place where man is known to survive some of the afflictions. (*Author's abstract.*)

653D MEETING

The 653d meeting of the Biological Society was held in the lecture room of the Cosmos Club April 14, 1923, at 8.05 p.m., with President HITCHCOCK in the chair and 69 persons present. Owing to the length of the program, the usual *Short Notes* were passed over. The regular program was as follows:

Mrs. CHARLES D. WALCOTT: *Wild flowers of the Canadian Rockies* (lantern). The speaker exhibited a large number of beautifully colored slides of the wild flowers and scenery of the Canadian Rockies and the Selkirks, particularly from the vicinity of Lake Louise and the Yoho Valley. The paper was discussed by T. ULKE, P. BARTSCH, and C. D. WALCOTT.

A. B. MANN: *The usefulness of diatoms* (lantern). The value of diatoms as a source of polishing powders, in the manufacture of dynamite (formerly) and filters, as a source of petroleum, and as the basic food of practically all sea animals, was described. The geographical distribution of diatoms is very definite, and their occurrence in the ocean and in the air promises to be of great importance in the future in the study of aerial and oceanic currents. They will also come to be of great significance in the discovery of new petroleum areas, supplementing the Foraminifera, the group now used for this purpose. The shapes and pattern of ornamentation of the different forms offer a valuable field for those interested in the development of new patterns to be used in decorating and in the mechanical arts. In conclusion, the speaker showed a number of slides illustrating a few of the 8000 known species.

654TH MEETING

The 654th meeting of the Biological Society was held in the lecture room of the Cosmos Club April 28, 1923, at 8 p.m., with President HITCHCOCK in the chair and 38 persons present. CARLYLE CARR, K. MCL. SMOOT, and PERCY VIOSCA, JR., were elected members of the Society.

Under *Short Notes*, Dr. A. D. HOPKINS stated, with reference to the belled turkey buzzards reported at a previous meeting, that he is informed that ELI HAMRICK, a mountaineer of Webster Springs, West Virginia, has for some years been in the habit of attaching bells to turkey buzzards. This probably explains the occurrence of such birds in this region.

AGNES CHASE: *Hunting types of plants in European herbaria* (lantern). The speaker visited European herbaria last year in quest of types of grasses. The important Hackel herbarium is deposited in the Naturhistorisches Museum of Vienna, making this probably the finest grass collection in Europe. Permission was given to take spikelets for the U. S. National Herbarium and many duplicates of classic collections were obtained. A brief visit was made to Professor HACKEL at Attersee. Munich, Florence, and Pisa were visited. An important collection of grasses made by Raddi in Brazil in 1817–1819, and preserved at Pisa, is the basis of a small and rare work on the grasses of Brazil. The Delessert herbarium at Geneva, the Berlin herbarium, the Rijks Herbarium at Leiden, the Botanical Garden at Brussels, the Paris Herbarium, and the Kew Herbarium and British Museum in London, were visited. The paper was discussed by Messrs. OBERHOLSER and PALMER.

S. PRENTISS BALDWIN; *Bird banding—a new method of bird study* (lantern). Most of the speaker's work in bird banding has been done at Thomasville, Ga., and Gates Mills, near Cleveland, Ohio. The methods of attaching bands to birds legs and the different types of traps used were illustrated by numerous colored lantern slides. The breeding records of a number of House Wrens were shown on the screen, and attention was called to the fact that after raising the first brood of the year, the pair almost invariably separate and take different mates for the second brood. The use of the bird banding method is of great value in indicating the extent to which individual birds return to the same locality to nest, and also in its application to the study of wintering birds and of migrants. Very frequent visits are made to the traps, and as the birds appear to appreciate the supply of food found in these, it frequently happens that the same individual enters a trap several times a day. It has been found that individual Chipping Sparrows not only remain in a closely restricted locality during a whole winter, but also return to the same winter quarters in succeeding years. A large proportion of the specimens of this species are found to be afflicted

with diseases of the feet, causing malformations and the loss of claws. This paper was discussed by Dr. H. C. OBERHOLSER.

655TH MEETING

The 655th meeting was held May 12, 1923, at 8 p.m., in the lecture room of the Cosmos Club, with President HITCHCOCK in the chair and 52 persons present.

Under *Short Notes*, Dr. R. W. SHUFELDT exhibited lantern slides of the fine gorilla recently mounted at the National Museum.

E. T. WHERRY: *Studies of plant distribution in relation to soil acidity.* The speaker reviewed his method of testing soil acidity, as published in Smithsonian Report for 1920, Gen. App. pp. 247–268, showing colored lantern slides of numerous species of native plants; he discussed the results of acidity tests of their soils, and the probable bearing of these on peculiarities of their distribution.

E. A. GOLDMAN: *The deer of the Grand Canyon National Game Preserve.* Peculiar conditions were described under which mule deer have become excessively abundant, and are still rapidly increasing in numbers. They are estimated to number at least 20,000. The deer are in excellent condition, but forage available in summer is taken to near the limit of production. Closer utilization of forage in summer will result in the serious impairment of carrying capacity of range. It is therefore foreseen that unless the increase in number of deer is controlled the starvation of some of the animals must result in he near future.

S. F. BLAKE, *Recording Secretary.*

ENTOMOLOGICAL SOCIETY

357TH MEETING

The 357th meeting of the Society was held April 5, 1923, at the New National Museum, with President HOWARD in the chair and 35 persons present. J. M. C. GARDNER and C. P. LOUNSBURY were elected members of the Society.

The regular program was as follows: PEREZ SIMMONS: *A house-fly plague in the American Expeditionary Forces.* The house-fly became a serious danger to health during the summer of 1918 at one of the camps of the 20th Engineers (Forestry) at Lamanchs, Department of the Landes, southwestern France. A location that should have been unusually healthful was transformed into a place of pestilence through neglect of sanitation. A severe epidemic of dysentery was followed by influenza and pneumonia, and there is strong evidence to support the belief that the fly-borne dysentery was largely responsible for the severity of the influenza among the main body of troops at Lamanchs. Although commissioned entomologists would have encountered substantial difficulties, it is felt that a great deal of good would have been accomplished by qualified men applying preventive and remedial measures at the proper time. (*Author's Abstract.*)

Doctor HOWARD said this paper gave a striking picture of conditions in camp. Orders were given, but they were not always carried out; but there was a cause for not enforcing them. Doctor Howard made suggestions to the Army officials and it was obvious that they were needed. The Army officials said they did not want men trained to count the spots on flies and mosquitoes, but they did want trained, sanitary engineers.

C. C. HAMILTON: *Biology of tiger beetles.* (Illustrated by charts.) This paper will be ready for publication shortly as an extended article treating of the morphology, classification, and biology of the known tiger-beetle larvae of America and Europe. The biological information has been derived principally from Shelford's and Griddle's published works and Shelford's unpublished notes. Very little is known regarding the habits of this interesting group other than those of the genus *Cicindela.* The part on classification deals with the genera *Cicindela, Tetracha, Omus,* and *Amblychila,* all occurring in the United States, and the genera *Cicindela* and *Tetracha* from Europe, the genus *Collyris* from the West Indies, and the genus *Ctenostema* from Central America. In all, the larvae of about fifty different species were studied. The larvae have good morphological characters for separating the genera, and most of the specific characters are definite. (*Author's abstract.*)

DR. CLEVELAND, of The Johns Hopkins University: *Intestinal protozoa of termites from a physiological standpoint.* He spoke of the wood-feeding termites and their intestinal protozoa with regard to the relation of the protozoa to the host. By incubation the protozoa were separated from the termite hosts. Some of the termites were much more difficult to keep alive than others. It was thought that the cause for some dying so easily was due to removing the protozoa. By replacing the protozoa the termites did not die as rapidly but lived over three or four months, while those from which the protozoa had been removed died in ten to twenty days.

Mr. HYSLOP: *The Coleopterous family, Plastoceridae.* (Illustrated.) This family, erected by Otto Schwarz (1906) to include the genera referred to by Candeze (1863) in his Elaterid tribe, Campylides, was found to contain a heterogeneous group of genera, so that it is inadvisable to consider further this family as valid. The type genus *Octonodes* Candeze (*Plastocerus* Lec. not Schaum) is based upon insects which recent larval studies have shown to be typical Cebrionids, while the genus *Lepturoides* Hbst. (*Campylus Fitch.*) is a typical Elaterid, closely related to the genus *Athous.* The genus *Oestodes* Lec., also included in this family, is of very doubtful position. The many exotic genera in the family present characters in the adults that make it difficult to consider them associated as a well defined family, and further larval studies will, undoubtedly, place many of them in other well recognized families. The specimens which led to this discussion were collected by W. B. Turner of the Office of Cereal and Forage Insect Investigations' Field Laboratory at Sacramento, California.

CHAS. T. GREENE, *Recording Secretary.*

SCIENTIFIC NOTES AND NEWS

A cablegram received from Kuling, Kiangsi Province, China, states that CHARLES M. HOY died from appendicitis on September 8. Mr. Hoy had been in China since the first of the year, collecting mammals for the National Museum. From the time of his arrival he had experienced innumerable hardships, due to heavy rains, intense heat, stinging caterpillars, and accidentally shooting himself in the leg last July.

Letters recently received from Dr. A. S. HITCHOCK, of the Department of Agriculture, report that good progress is being made in collecting botanical specimens in Ecuador. In the first part of August ten days were spent in the vicinity of Tulcán, much collecting being done on the high paramos.

Later, Mt. Pinchincha was ascended. Dr. Hitchock was planning to spend the greater part of September in the region about Loja, Cuenca, and Huigra.

G. F. LOUGHLIN has been made Acting Chief of the Section of Metalliferous Deposits, Division of Geology in the U. S. Geological Survey.

On the afternoon of September 20, a violent explosion followed by fire occurred in the Dynamometer Laboratory of the Bureau of Standards. One man was killed instantly, three others injured so seriously that they died during the night, and four others seriously burned or cut. The heroism of the survivors of the staff in rescuing the injured from the furiously burning wreckage and in shutting off the electric circuits and the ammonia valves, minimized the loss of life and property.

The explosion occurred in the altitude chamber which is used in testing the performance of aircraft engines under the conditions of low pressure and temperature obtaining at high altitudes. At the time of the accident the room was being used in investigating the performance of an automobile engine, at temperatures corresponding to winter operation, using various grades of gasoline. The work was intended to determine the possible increase in gasoline production per barrel of crude oil, with the accompanying conservation of our national resources, by the use of gasoline of lower volatility.

The explosion was due to the ignition of an explosive mixture in the chamber.

The dead are: LOGAN L. LAUER, URBAN J. COOK, STEPHEN N. LEE, JOSEPH KENDIG. The injured are: HENRY K. CUMMINGS, FRANK E. RICHARDSON, ROGER BIRDSELL, GEORGE W. ELLIOTT, C. N. SMITH, R. F. KOHR.

Most of these men were college graduates with experience and skill in research work, and a grave blow to science and engineering must be added to the human loss to their families and colleagues.

Thus grows the long list of those who have given their lives for the increase of human knowledge and welfare.